AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in this application.

Listing of Claims:

1. (Currently Amended) A method ~~to operate a decoder,~~ comprising:

executing in a decoder an iterative turbo decoding process comprising a plurality of rounds on a signal received from a channel;

at each of the plurality of rounds, determining a soft value that depends in part on a value of at least one extrinsic value;

monitoring, during the plurality of rounds~~operation of the decoder on a signal received from a channel~~, ~~the~~ values of the at least one extrinsic value; ~~and~~

based on a change in the monitored ~~at least one~~ values, determining whether the signal comprises a valid code word or comprises only noise; and

based on the determining, outputting from the decoder a decision on whether or not the signal comprises a valid code word.

2. (Original) A method as in claim 1, where the decoder comprises one of a LogMap or a MaxLogMap turbo decoder.

3. (Currently Amended) A method as in claim 1, where

based on a change in the monitored values comprises determining that the signal is a valid code word when ~~during rounds of decoding~~ absolute values of the at least one extrinsic ~~values tend~~ value tends to increase, ~~provided that the input signal contains a valid code word, as opposed to when the input signal contains only noise,~~ and where

determining whether the signal comprises a valid code word or comprises only noise ~~accurately distinguishes a valid code word from noise, and also obtains~~ further comprises obtaining information that is indicative of the quality of ~~a~~ the iterative decoding process to distinguish a valid code word from noise.

4. (Previously Presented) A method to operate a decoder when receiving a signal through a channel, comprising:

monitoring, during operation of the decoder on a signal received from a channel, the value of at least one extrinsic value; and

based on the monitored at least one value, determining whether the signal comprises a valid code word or comprises only noise, where

the decoder comprises a turbo decoder, and where the turbo decoder comprises a detector that considers at least one inequality where:

1) $SE_AE_B(L) \leq const1 \text{ X } SE_AE_B(1)$;
2) $SE_AE_B(L) \leq const2 \text{ X } S$;
3) $SE_A(L) \leq const3 \text{ X } S$;
4) $SE_B(L) \leq const3 \text{ X } S$;
5) $E_A(L) \leq const4 \text{ X } E_A(1)$;
6) $E_B(L) \leq const4 \text{ X } E_B(1)$;
7) $E_AE_B(L) \leq const4 \text{ X } E_AE_B(1)$;
8) $E_A(L) \leq const5 \text{ X } S$; and
9) $E_B(L) \leq const5 \text{ X } S$;

where L represents the number of a last turbo decoder round, where $\leq$ represents 'less than or equal to', where X represents times (multiplication), and where const represents a constant value, where if any one of inequalities are found to be true, then it is determined that the received signal does not comprise a valid turbo coded code word, and where

$SE_AE_B(n)$ denotes a sum of absolute values of soft values after an n^{th} turbo round;

$E_AE_B(n)$ denotes a sum of absolute values of sums of extrinsic values of A-parities and extrinsic values of B-parities after an n^{th} turbo round;

$E_A(n)$ denotes a sum of absolute values of extrinsic values of A-parities after the n^{th} turbo round;

$E_B(n)$ denotes a sum of absolute values of extrinsic values of B-parities after the n^{th} turbo round;

$SE_A(n)$ denotes a sum of absolute values of sums of systematic samples and extrinsic values of A-parities after the n^{th} turbo round;

$SE_B(n)$ denotes a sum of absolute values of sums of systematic samples and extrinsic values of B-parities after the n^{th} turbo round; and

S denotes a sum of absolute values of systematic samples.

5. (Original) A method as in claim 4, where a sum of absolute values of systematic samples is at least one of replaced and complemented by a sum of absolute values of parity samples.

6. (Original) A method as in claim 4, where const1 equals about 1.125, where const2 equals about 1.5, where const3 equals about 1.25, where const4 equals about 2, and where const5 equals about 0.8.

7. (Original) A method as in claim 4, where the threshold constants const1, const2, const3, const4, and const5 are greater when applying an inequality as a quality detector than as a noise/signal detector.

8. (Previously Presented) A method as in claim 1, where said decoder comprises part of a wideband code division multiple access (WCDMA) user equipment.

9. (Original) A method as in claim 4, where the value of const is a function of a coding rate.

10. (Currently Amended) A decoder ~~having an input for coupling to a signal received through a channel,~~ comprising:

means for executing in a plurality of rounds an iterative turbo decoding process on a

signal received from a channel;

means for determining, at each of the plurality of rounds, a soft value that depends in part on a value of at least one extrinsic value;

means for monitoring, during the plurality of rounds~~operation of the decoder on a signal received from the channel~~, ~~the~~ values of at least one extrinsic value; and

means, responsive to a change in the monitored ~~at least one~~ values, for determining whether the signal comprises a valid code word or comprises only noise; and

means for outputting, from the means for executing and based on the means for determining, a decision on whether or not the signal comprises a valid code word.

11. (Original) A decoder as in claim 10, where the decoder comprises one of a LogMap or a MaxLogMap turbo decoder.

12. (Currently Amended) A decoder as in claim 10, where

responsive to a change in the monitored values comprises determining that the signal is a valid code word when ~~during rounds of decoding~~ absolute values of the at least one extrinsic ~~values tend~~ value tends to increase, ~~provided that the input signal contains a valid code word, as opposed to when the input signal contains only noise,~~ and where

said means for determining whether the signal comprises a valid code word or comprises only noise ~~accurately distinguishes a valid code word from noise, and~~ also obtains information that is indicative of the quality of the decoding process to distinguish a valid code word from noise.

13. (Previously Presented) A decoder having an input for coupling to a signal received through a channel, comprising:

means for monitoring, during operation of the decoder on a signal received from ~~a~~ the channel, the value of at least one extrinsic value; and

means, responsive to the monitored at least one value, for determining whether the signal comprises a valid code word or comprises only noise, where

the decoder comprises a turbo decoder, and where the turbo decoder comprises a detector that considers at least one inequality where:

1) $SE_AE_B(L) \leq const1 \text{ X } SE_AE_B(1)$;

2) $SE_AE_B(L) \leq const2 \text{ X } S$;

3) $SE_A(L) \leq const3 \text{ X } S$;

4) $SE_B(L) \leq const3 \text{ X } S$;

5) $E_A(L) \leq const4 \text{ X } E_A(1)$;

6) $E_B(L) \leq const4 \text{ X } E_B(1)$;

7) $E_AE_B(L) \leq const4 \text{ X } E_AE_B(1)$;

8) $E_A(L) \leq const5 \text{ X } S$; and

9) $E_B(L) \leq const5 \text{ X } S$;

where L represents the number of a last turbo decoder round, where $\leq$ represents 'less than or equal to', where X represents times (multiplication), and where const represents a constant value, where if any one of inequalities are found to be true, then it is determined that the received signal does not comprise a valid turbo coded code word, and where

$SE_AE_B(n)$ denotes a sum of absolute values of soft values after an n^{th} turbo round;

$E_AE_B(n)$ denotes a sum of absolute values of sums of extrinsic values of A-parities and extrinsic values of B-parities after an n^{th} turbo round;

$E_A(n)$ denotes a sum of absolute values of extrinsic values of A-parities after the n^{th} turbo round;

$E_B(n)$ denotes a sum of absolute values of extrinsic values of B-parities after the n^{th} turbo round;

$SE_A(n)$ denotes a sum of absolute values of sums of systematic samples and extrinsic values of A-parities after the n^{th} turbo round;

$SE_B(n)$ denotes a sum of absolute values of sums of systematic samples and extrinsic values of B-parities after the n^{th} turbo round; and

S denotes a sum of absolute values of systematic samples.

14. (Original) A decoder as in claim 13, where a sum of absolute values of systematic samples is

at least one of replaced and complemented by a sum of absolute values of parity samples.

15. (Original) A decoder as in claim 13, where const1 equals about 1.125, where const2 equals about 1.5, where const3 equals about 1.25, where const4 equals about 2, and where const5 equals about 0.8.

16. (Original) A decoder as in claim 13, where the threshold constants const1, const2, const3, const4, and const5 are greater when applying an inequality as a quality detector than as a noise/signal detector.

17. (Previously Presented) A decoder as in claim 10, where said decoder comprises part of a wideband code division multiple access (WCDMA) user equipment.

18. (Original) A decoder as in claim 13, where the value of const is a function of a coding rate.

19. (Currently Amended) An integrated circuit, comprising: ~~circuitry forming at least a portion of~~ a turbo decoder having an input for coupling to a signal received through a channel, said turbo decoder configured to iteratively decode the signal in a plurality of decoding rounds by determining at each of the plurality of rounds a soft value that depends in part on a value of at least one extrinsic value; and

~~said circuitry operable for monitoring~~ a detector coupled to the turbo decoder and configured to monitor, during the plurality of decoding rounds~~operation of the decoder on a signal received from the channel~~, ~~the~~ values of the at least one extrinsic value and configured to determine, ~~for use in determining~~ based on a change in the monitored values, whether the signal comprises a valid code word or comprises only noise; and

said turbo decoder further configured to output, based on the determination, a decision on whether or not the signal comprises a valid code word.

20. (Previously Presented) The integrated circuit of claim 19, where the turbo decoder comprises

one of a LogMap or a MaxLogMap turbo decoder.

21. (Currently Amended) The integrated circuit of claim 19, where based on a change in the monitored values comprises determining that the signal comprises a valid code word when ~~during rounds of decoding~~ absolute values of the at least one extrinsic ~~values tend~~ values tend to increase, ~~provided that the input signal contains a valid code word, as opposed to when the input signal contains only noise,~~ and the ~~circuitry~~detector is further ~~operable~~ configured to obtain information that is indicative of the quality of the decoding process.

22. (Currently Amended) The integrated circuit of claim 19, where the ~~circuitry comprises a~~ detector ~~that considers~~ is configured to consider a relationship between at least one pair of absolute values of at least one of extrinsic values and systematic samples.

23. (Currently Amended) A radio frequency receiver, comprising: ~~circuitry forming at least a portion of~~

a turbo decoder having an input for coupling to a signal received through a channel, said turbo decoder configured to iteratively decode the signal in a plurality of decoding rounds by determining at each of the plurality of rounds a soft value that depends in part on a value of at least one extrinsic value; and

~~said circuitry operable for monitoring~~ a detector coupled to the turbo decoder and configured to monitor, during the plurality of decoding rounds~~operation of the decoder on a signal received from the channel~~, ~~the~~ values of the at least one extrinsic value and configured to determine, ~~for use in determining~~ based on a change in the monitored values, whether the signal comprises a valid code word or comprises only noise;

said turbo decoder further configured to output, based on the determination, a decision on whether or not the signal comprises a valid code word.

24. (Previously Presented) The radio frequency receiver of claim 23, where the turbo decoder comprises one of a LogMap or a MaxLogMap turbo decoder.

25. (Currently Amended) The radio frequency receiver of claim 23, where based on a change in the monitored values comprises determining that the signal comprises a valid code word when ~~during rounds of decoding~~ absolute values of the at least one extrinsic ~~values tend~~ value tends to increase, ~~provided that the input signal contains a valid code word, as opposed to when the input signal contains only noise,~~ and the ~~circuitry~~ detector is further ~~operable~~ configured to obtain information that is indicative of the quality of the decoding process.

26. (Currently Amended) The radio frequency receiver of claim 23, where the ~~circuitry comprises a~~ detector ~~that considers~~ is configured to consider a relationship between at least one pair of absolute values of at least one of extrinsic values and systematic samples.

27. (Previously Presented) The radio frequency receiver of claim 23, comprising a part of a cellular telephone.

28. (Previously Presented) A decoder ~~having~~comprising:

an input for coupling to a signal received through a channel;~~, comprising~~

decoding circuitry configured to iteratively decode the input signal in a plurality of decoding rounds by determining, in each of the decoding rounds, a soft value that depends in part on a value of at least one extrinsic value;

a detector coupled to the decoding circuitry and configured to monitor, during the decoding rounds, values of the at least one extrinsic value and configured to determine, based on a change in the monitored values,

~~a unit operable at least in response to receipt of a signal from the channel to determine, responsive to a monitored at least one value,~~ whether the signal comprises a valid code word ~~to be decoded~~ or comprises only noise;

wherein the decoding circuitry and the detector are configured to output, based on the determination, a decision on whether or not the signal comprises a valid code word.

29. (Previously Presented) The decoder as in claim 28, operable as a LogMap or a MaxLogMap turbo decoder.

30.(New) The method of claim 1, wherein the determining is based on a quality of convergence of the iterative decoding process and the quality is based on a change in the monitored values.

31.(New) The decoder of claim 10, wherein the means for determining is responsive to a change in quality of convergence of the iterative decoding process and the quality is based on a change in the monitored values.

32.(New) The integrated circuit of claim 19, wherein the detector is configured to determine whether the signal comprises a valid codeword or comprises only noise based on a quality of convergence of the iterative decoding process and the quality is based on a change in the monitored values.

33.(New) The radio frequency receiver of claim 23, wherein the detector is configured to determine whether the signal comprises a valid codeword or comprises only noise based on a quality of convergence of the iterative decoding process and the quality is based on a change in the monitored values.

34.(New) The decoder of claim 28, wherein the detector is configured to determine whether the signal comprises a valid codeword or comprises only noise based on a quality of convergence of the iterative decoding process and the quality is based on a change in the monitored values.